33387
S/190/62/004/002/018/021
B101/B110

Adhesion of polymers ...

SUBMITTED: February 15, 1961

Card 4/4

33388
S/190/62/004/002/019/021
B110/B101

15.1420

AUTHORS: Gul', V. Ye., Chang Yin-hsi, Vakula, V. L., Voyutskiy, S. S.

TITLE: Adhesion of polymers to silicate glass. II. Nature of the adhesive bond rupture during the exfoliation of elastomer-glass joints

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 2, 1962, 294-298

TEXT: To study the nature of the adhesive bond rupture between polymer and silicate glass, water drops of equal size were applied with a pipette on the adhesive film or on glass before and after its contact with the elastomer. The outline of the drop was projected with a special lantern onto photographic paper after 30 sec contact with the substratum. The wetting B was calculated from the boundary angle θ between the water drop and the substratum: $B = \cos \theta$. The adhesion was determined according to V. Ye. Gul' et al. (Izv. vyssh. uch. zav.; Khimiya i khimicheskaya tekhnologiya, 2, 270, 1959). After contact with polyisobutylene (I) (molecular weight 200,000), the wetting of the glass sharply drops with increasing heating temperature while the control curve (without contact)

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Adhesion of polymers to...

drops only slightly. This indicates a polymer residue growing with the contact temperature. Since the wetting of glass differs for every temperature and does not equal the wetting of the polymer film (0.01), the layer of I cannot be continuous. Thus, the destruction of the joint was of adhesive nature. Adhesion grows with the contact temperature. This and the reduced wetting after exfoliation give proof of the increase in adhesive strength of the glued joint with increasing contact temperature, and the remaining of an ever more continuous polymer layer. Similar dependences were observed for glass - natural rubber. In glass - polychloroprene, wetting after contact with the polymer depends hardly on the contact temperature but differs greatly from the wetting of glass that has not been in contact with a polymer. This is probably due to formation of a very thin, continuous film of polychloroprene (wetting 0.50) with high adhesion to glass. Tests with СКН-40 (SKN-40) butadiene acrylonitrile copolymer yielded no positive results owing to similar wetting of glass with and without polymer (high polarity). Quartz or carbon replicas were separated before and after contact with the adhesive, and studied with an ЭЛМИД-2 (ELMID-2) electron microscope. Many small polymer spots were observed on glass after 30 min contact at 140°C with I (molecular weight

Adhesion of polymers to...

200,000). Fewer but larger spots were found under equal conditions on natural rubber owing to lower strength of its adhesive bond. After 30 min contact at room temperature, polychloroprene left large portions due to its higher adhesion to glass. The authors thank N. M. Fodiman and Z. M. Ustinova for electron-microscopic studies. There are 3 figures and 6 references: 2 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: J. J. Bikerman, J. Colloid Sci., 2, 163, 1947; J. J. Bikerman J. Appl. Phys., 28, 1484, 1957; J. J. Bikerman, Proc. Second International Conference on Surface Activity, London, 3, 427, 1957; J. F. Murphy Adhesives Age, 3, 22, 1960.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: February 15, 1961

Card 3/3

S/190/62/004/005/003/026
B119/B101

AUTHORS: Gul', V. Ye., Mayzel', N. S., Kamenskiy, A. N., Fodiman, N.M.

TITLE: Electroconducting polymer-base systems. I. Study of the structure of current conducting compositions on the basis of unhardened resins

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 5, 1962, 642-646

TEXT: The authors studied the structural and mechanical properties, the microstructure (with a [illegible]-2 (D-2) electrostatic electron microscope at 6000-fold electrooptic magnification), and the electrical conductivity of various phenol formaldehyde resins of the resol type (I) or the [illegible]-40 (E-40) epoxy resin type (II) filled with acetylene black. Results: Up to 30% carbon black is contained in the resin in the form of isolated particles; the specific electrical resistance is almost constant in the range of carbon black concentrations <30%. From 30% onward, the carbon black particles of I (grain size: ~25 Å) are contacting one another continuously. Thus, the values of the electrical resistance are much lower than in mixtures containing less carbon black. With II, the grains of carbon black

Card 1/2

Electroconducting polymer-base ...

are much larger so that greater amounts are necessary to improve conductivity. The difference in behavior of the two types of resin is due to their chemical nature. P. A. Rebinder and Ya. M. Parnas are thanked for their advice. There are 7 figures.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: February 20, 1961

S/190/62/004/005/004/026
B119/B101

AUTHORS: Gul', V. Ye., Mayzel', N. S., Kamenskiy, A. N., Fodiman, N.M.

TITLE: Electroconducting polymer-base systems. II. Study of the structure of current-conducting compositions on the basis of hardened resins

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 5, 1962, 649-654

TEXT: The authors studied the structural and mechanical properties (with a combined device consisting of a Polyani dynamometer and a PMT -3 (PMT-3) microhardness tester), the microstructure (with an electron microscope), and the electrical conductivity of various phenol formaldehyde resins of the resol type (I) or the E-40 (E-40) epoxy resin type (II) during and after hardening. Resins with a specific resistance below 10^5 ohm·cm are considered to be current conducting (according to R. H. Norman, Rubber J., 31, 24, 1956). Results: The specific resistance of the resins decreases rapidly at the beginning of the hardening process (up to the fifth to fifteenth minute; especially evident

Electroconducting polymer-base ...

with a 25% content of carbon black in the resin), then it remains practically constant. The structural examination shows that the increasing steric cross linkage of the resin during hardening causes volume contraction and, consequently, filler accumulation on the one hand, and disintegration and further distribution of carbon-black particles on the other hand. A continuous carbon black structure forms and improves the conductivity of hardened resins. Three-dimensional cross linkage of I, which is greater than that of II, makes all these effects much stronger. P. A. Rebinder and Ya. M. Parnas are thanked for their advice. There are 5 figures.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova(Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: February 20, 1961

Card 2/2

MARKIN, Yu. I.; GORCHAKOVA, V. M.; GUL', V. Ye.; VOYUTSKIY, S. S.

Adhesion of high polymers to metals. Part 3: Thickness and structure of the oxide film on a metallic substratum as affecting adhesion. Izv. vys. ucheb. zav.; khim. i khim. tekh. 5 no.5:808-814 '62. (MIRA 16:1)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova, kompleksnaya laboratoriya po polimeram.

(Polymers) (Metallic oxides) (Adhesion)

30056

S/063/62/007/002/008/014
A057/A126

15.8540

AUTHOR: Gul', V.Ye. Professor

TITLE: Current conducting polymer materials

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleyeva, v. 7, no. 2, 1962, 200 - 206

TEXT: The choice of a polymer for the preparation of a conducting mixture depends on two factors - the required physical and chemical properties and the specific resistance (ρ) necessary for the given purpose. It was observed that ρ depends on the quantity of soot (used as filler). Electronmicroscopic investigations showed that soot changes the structure of the polymer mixture, effecting a drop in resistance at a 30% content, which is connected with a qualitative change of structure. Soot is dispersed in the polymer mixture below a content of 30%. Above this concentration chains are formed, which may give a steric network, i.e., a tri-dimensional chain structure, thus apparently effecting the sharp decrease in resistance. Moreover, ρ depends upon the chemical nature of the resin, or on the form and distribution of soot particles in the resin. Hence phenol-formaldehyde resins are better compatible with soot than ρ -40

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Current conducting.....

(E-40) epoxide resins. Aggregates of soot are formed in the epoxide resin and inhibit the formation of a chain structure. Experiments carried out with some mixtures varying the hardening time revealed a considerable effect of the latter on the resistance of the polymer material. The rising conductivity observed as a result of thermal treatment indicates the same mechanism of this effect. The change in the dispersion degree of soot apparently plays the main role influenced by the steric structure formed during the hardening of the resin. The effect of soot on the hardening of various mixtures can be different, even opposite. The determining influence on the final value of conductivity seems to depend upon the distribution of soot before the hardening. During the latter there occurs a completion of the previously formed elements of soot structure. Two factors determine the process during the hardening - simultaneously with the formation of branched macromolecules - the growth of branches and the coupling of macromolecules into the tri-dimensional network cause a crushing of aggregates of soot particles and on the other hand the solvent evaporates during hardening at higher temperatures and decreases the volume effected by cross-linking. Decreasing of the volume increases the probability of soot-soot contacts and herewith the conductivity. Application of current conducting polymer materials show various advantages in different fields. There are 12 figures.

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40576
S/070/62/007/005/013/014
E132/E460

24780

AUTHORS: Gul', V.Ye., Lushcheykin, G.A., Fridkin, V.M.

TITLE: Electrets from elastic polymers

PERIODICAL: Kristallografiya, v.7, no.5, 1962, 797-799

TEXT: The production of electrets by the orientation of molecules in an electric field while the specimen is heated and cooled is well-known. However, the production of electrets by cross-linking (vulcanization) has hitherto not been described. The possibilities of forming very high stability electrets by this method are obvious. For these experiments natural rubber with the usual content of vulcanizing compounds (100 parts by wt. rubber, 3 parts sulphur, 1 part mercaptobenzothiazol, 5 parts ZnO) but without a filler. The mixture was vulcanized in a press under a pressure of 70 kg/cm^2 between sheets of Al foil which were insulated from the press by 6 to 8 layers of cellophane. Fields of 5 to 10 kV/cm were applied during the process. Heterocharges were formed for low fields and homocharges for higher fields. The change of heterocharge with time could be expressed by

$$s = s_1 \exp(-t/\tau_1) + s_2 \exp(-t/\tau_2)$$

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Electrets from elastic polymers

where τ_1 = 110 min and $\tau_2 = 10^4$ min. The heterocharge is thus due to two mechanisms, the first dipole orientation (relaxation time τ_1) and the second the macroscopic displacement of the ions the long relaxation time of which (τ_2) is due to the high specific resistance of the material. The production of charges of the same sign on both sides of the sheet can be explained by the different numbers of positive and negative ions moving towards the electrodes. Besides the surface charging the piezomodulus was also measured. The latter was found to be directly proportional to the surface density of the charge and reached a value of 10^{-7} c.g.s.u. The full time of vulcanization was 30 min at 143°C. After vulcanization, specimens could not be electrified and it is clear that the electrets are locked in by the vulcanization. There are 3 figures.

ASSOCIATIONS: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova (Moscow Institute of Fine Chemical Technology imeni M.V.Lomonosov)
Institut kristallografii AN SSSR (Institute of Crystallography AS USSR)

SUBMITTED: January 16, 1962

Card 2/2

GUL', V.Ye.; KOVRIGA, V.V.; VASSERMAN, A.M.

Effect of supermolecular structure on the strength of polypropylene. Dokl. AN SSSR 146 no.3:656-658 S '62. (MIRA 15:10)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova i Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti. Predstavleno akademikom. R.A.Karginym.
(Propene)

ZNAMENSKIY, Nikolay Nikolayevich; GUL', V.Ye., prof., doktor khim. nauk, retsenzent; VLODAVETS, I.N., kand. khim. nauk, retsenzent; MOROZOVA, I.I., red.; SATAROVA, A.M., tekhn. red.

[Polymer materials in the dairy industry] Polimernye materialy v molochnoi promyshlennosti. Moskva, Pishchepromizdat, 1963. 190 p. (MIRA 16:5)

(Dairy industry--Equipment and supplies)
(Polymers)

ACCESSION NR: AR4042249 S/0081/64/000/008/S020/S020

SOURCE: Ref. zh. Khimiya, Abs. 8S102

AUTHOR: Rayevskiy, V. G.; Yegorov, Ye. V.; Mikhlin, V. E.; Gul', V. Ye.; Voyutskiy, S. S.

TITLE: Influence of radiochemical cross-linking of elastomers on their adhesion to fiberforming polymers

CITED SOURCE: Sb. Vy*sokomolekul. soyedineniya. Adgeziya polimerov. M., AN SSSR, 1963, 89-93

TOPIC TAGS: elastomer, adhesion, polymer, radiochemistry, radiation vulcanization

TRANSLATION: The change of durability of adhesion of elastomers SKS-30 ARM-15, SKN-26 and butyl rubber with polycaprolactam film during irradiation of samples by a flow of accelerated electrons was examined. It was determined that the change of resistance to separation during irradiation is described by curves passing through a maximum which corresponds to a definite integral dose of irradiation.

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ACCESSION NR: AR4042249

Thus the character of the change in adhesion strength during radiation vulcanization does not differ qualitatively from that observed earlier for cases of thermal vulcanization in the presence of vulcanizing agents. For samples with coatings of SKS-30 ARM-15 the dependence of the adhesion of this elastomer to polycaprolactam film was studied from the degree of its cross-linking during irradiation. The latter was characterized by the length of the section of molecular chain (M_c), included between two nodes of the space lattice. It was shown that the limiting degree of cross-linking, after the achievement of which a drop of adhesion strength sets in, shifts under the influence of radiation in the direction of a smaller density of the lattice, as compared to that observed for thermal vulcanization in the presence of vulcanizing agents. This phenomenon is explained from the positions of diffusion theory of adhesion. The presence of a limiting degree of cross-linking during radiation vulcanization was observed also on rubber-fabric materials based on capron fabric with a coating of Nairit and SKS-30 ARM-15 applied by facing the fabric on a calender. From authors' abstract.

SUB CODE: MT, OC ENCL: 00

Card 2/2

GUL', V.Ye.; MAYZEL', N.S.; PASYNSKAYA, A.A.

Investigating the structure and properties of thermosetting electroconductive plastics. Plast.massy no.10:38-42 '63. (MIRA 16:10)

GUL', V.Ye.; ZABOROVSKAYA, Ye.E.; DONTSOVA, E.P.; BUBNOVA, B.G.

Adhesion of thermosetting polymers to glass. Vysokom.soed. 5 no.2:269-273 F '63. (MIRA 16:2)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.
(Polymers) (Glass) (Adhesion)

15.8350

S/190/63/005/002/020/024
B101/B102

AUTHORS: Gul', V. Ye., Chernin, I. M., Zaborovskaya, Ye. E., Dontsova, E. P., Gvil'dis, V. Yu.

TITLE: Investigation of the rupture process of glass fabric-reinforced resins

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 2, 1963, 274-278

TEXT: The effect of the nature of the binder on the tensile strength of glass-reinforced resins (GRR) was studied. $\sigma = f(\varepsilon)$ was determined and the breaking process was recorded with a high-speed camera. Results: GRR with epoxy phenol or epoxy phenol-rubber binder (I) break in the same way as a homogeneous brittle material, $\sigma = 1600 \pm 50$ kg/cm^2. In GRR with epoxy organosilicon binder, the individual glass fabric layers behave nonuniformly, $\sigma = 1250 \pm 100$ kg/cm^2. GRR with epoxy resin binder differed but slightly from I, but a slight separation into layers set in; $\sigma = 1550 \pm 50$ kg/cm^2. The most irregular behavior was observed in glass fabric layers with polyester maleinate or epoxy polyester acrylate binder; $\sigma = 650 \pm 100$ kg/cm^2.

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Conclusion: The strength of GRR increases with the cohesive strength of the binder and with its adhesion to glass. Under otherwise equal conditions, the highest strength is obtained if the difference between the relative elongation of the GRR and of the binder itself is small. Owing to the penetration of the binder into microcracks and the resulting compensation of the overstrain peaks the strength of the GRR can be higher than the total of the strengths of glass fabric and binder. There are 9 figures.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: September 8, 1961

LUSHCHEYKIN, G.A.; GUL', V. Ye.; DOGADKIN, B.A.

Electric charges arising during the deformation of polymers.
Koll.zhur. 25 no.3:334-340 My-Je '63. (MIRA 17:10)

1. Institut tonkoy khimicheskoy tekhnologii, Moskva.

L 14283-63 EPR/EWP(j)/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC/ASD Ps-4/Pr-4/
Pc-4 RM/WW/JD
ACCESSION NR: AP3004083 S/0069/63/025/004/0412/0417

AUTHOR: Dogadkin, B. A.; Gul', V. Ye.; Lushcheykin, G. A.

TITLE: Study of electric charges produced during the multiple deformation of vulcanizates and their effect on fatigue strength

SOURCE: Kolloidny*y zhurnal, v. 25, no. 4, 1963, 412-417

TOPIC TAGS: vulcanizate, vulcanizate multiple deformation, compression electric-charge formation, electric-charge measurement, lithium butadiene rubber, nitrile rubber, unloaded vulcanizate, loaded vulcanizate, carbon-black conductive structure, inner orientation, polarization, outer-surface charge buildup, vulcanizate fatigue strength, Reznikovskiy machine, fatigue strength, compression electric charge

ABSTRACT: The effect of temperature, polymer type, and filler on the magnitude of electric charges produced during multiple deformation in the compression of vulcanizates has been studied by means of the two apparatus whose diagrams are shown in Fig. 1 of the Enclosure. In apparatus I, [maximum] deformation is constant (condition 1), and the charge is determined by measurement of peak voltage

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ACCESSION NR: AP3004083

6

at the lower electrode. In apparatus II deformation is conducted under constant load (condition 2), and the charge generated during one cycle is first amplified and then computed. The experiments were conducted with lithium butadiene (SKBN) or nitrile (SKN-18, SKN-26, SKN-40) rubbers having an identical degree of cross-linking. The effects of polymer type and temperature are presented in the form of plots, shown in Figs. 2 and 3. The charges are maximum under condition 1 at temperatures somewhat below and under condition 2, somewhat above the glass transition temperatures. In channel black-loaded vulcanizates the charges are minimum for black contents corresponding to maximum development of a continuous carbon black conductive structure. Discussion of the results indicates that charges are produced both owing to inner orientation polarization and to outer-surface charge buildup. The effect of electric charges on the fatigue strength of carbon black-loaded butadiene-styrene (SKS-30A), natural, 1,4-cis-polyisoprene (SKI), and carboxylated (SKS-30-1) rubber vulcanizates was studied with incised specimens, which were subjected to bending-torsion tests on the Reznikovskiy machine. Fatigue strength was lowered by charges produced during the deformation of the vulcanizates. This phenomenon is considered to be the result of the generation of voltages which can activate both oxidation and degradation and of the rearrangement of vulcanization linkages. The fatigue strength of carbon black vulcanizates

L 14283-63
ACCESSION NR: AP3004083

during multiple deformation can be increased by grounding the electric charges. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 16Feb63 DATE ACQ: 15Aug63 ENCL: 03

SUB CODE: CH, MA NO REF SOV: 004 OTHER: 003

Card 3/3

DOGADKIN, B.A.; GUL', V.Ye.; ANFIMOV, B.N.; LUSHCHEYKIN, G.A.

Dielectric properties of unfilled vulcanizates of various structure. Koll.zhur. 25 no.5:515-519 S-O '63. (MIRA 16:10)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova.

KUANYSHEV, K.G.; GUL', V.Ye.; DOGADKIN, B.A.

Apparatus for determining creep during cyclic stresses. Zav. lab. 29 no.9:1138-1139 '63. (MIRA 17:1)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

GUL', V.Ye.; LUSHCHEYKIN, G.A.; DOGADKIN, B.A.

Electric charges due to the deformation of polymers. Dokl. AN SSSR 149 no.2:302-304 Mr '63. (MIRA 16:3)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova. Predstavleno akademikom V.A.Karginym.
(Polymers) (Polarization (Electricity)) (Deformations (Mechanics))

ACCESSION NR: AP4018168 S/0191/64/000/003/0045/0048

AUTHOR: Chernin, I. M.; Gul', V. Ye.

TITLE: Mechanism of rupturing cloth reinforced with fiberglasses by tension

SOURCE: Plasticheskiye massy*, no. 3, 1964, 45-48

TOPIC TAGS: fiberglass, reinforced fiberglass, rupture mechanism, glasscloth deformation, resin deformation, resin cracking, resin spalling, fiberglass rupture

ABSTRACT: The mechanism of rupturing fiberglass reinforced with glass cloth under tension was investigated. If the deformability of the resin and the glass cloth of the fiberglass differ significantly, then on straightening the warp, the resin around the weft cracks and then spalls, the weft is partially loosened and starts to bend further. The thickness of the separate fiberglass layers and of the fiberglass increases, and lamination results. As the weft is freed and bends, a torque is formed which ruptures the elementary resin

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ACCESSION NR: AP4018168

cell at the surface which is inclined at about 45° to the longitudinal axis; the stresses are concentrated and the rupture passes through the entire thickness of the sample. If the deformability of the resin and glass cloth are similar, lamination does not occur. The sample is ruptured only after the total strength of the cloth and its binder are exhausted in the weakest section of the sample; the surface of the rupture is perpendicular to the direction of the action of the forces. The rupture is of the type occurring in a brittle monolithic material. Orig. art. has: 9 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: MA, PH NO REF SOV: 003 OTHER: 000

Card 2/2

L 13634-65 EWP(e)/EWT(m)/EPF(c)/EPR/EWP(j)/T/EWP(t) Pc-4/Pr-4/Pt-4/Pu-4
ACCESSION NR: AP4046901 S/0191/64/000/010/0053/0055

AUTHOR: Dontsova, E. P.; Gvil'dis, V. Yu.; Zaborovskaya, Ye. E.; Gul', V. Ye.

TITLE: Temperature dependence of the rupture of fiberglass fabrics during unidimensional stretching

SOURCE: Plasticheskiye massy*, no. 10, 1964, 53-55

TOPIC TAGS: fiberglass, fiberglass fabric, plastic cloth, laminated plastic, reinforced plastic, epoxide resin, epoxyphenol resin, binder, ply separation

ABSTRACT: The authors attempted to clarify the temperature dependence of the tensile strength of fiberglass fabrics on the basis of the assumption that if the resin and glass fibers undergo the same deformation, the plastic material behaves as a monolith, does not separate into layers, and is destroyed only if the stress applied to it exceeds the combined strength of all the glass fabric layers. Fiberglass fabrics containing epoxyphenol resin or epoxide binders (K-75 or K-82) were investigated over a temperature range of -40 to +200C. It was found that fabrics based on different binders differ very little from one another in tensile strength at either low temperatures (-40C) or temperatures above 100-150C, regardless of the different strength and thermal stability of the hardened binders. In the range

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L 13634-65
ACCESSION NR: AP4046901

between -40 and +100C, the [illegible] is determined by the type of binder. In fabrics made of more thermo stable resin, the strength decreases more slowly with increasing temperature. The character of the destruction in fiberglass fabrics can be clearly seen in photographs of the samples in two planes, in front and side views. These observations are discussed. No ply separation takes place at 20 or 60C, but on increasing the temperature to 100C and higher, or decreasing it to -40C, the layers separate. At 100C, the fabrics containing epoxyphenol resin show less separation than samples with pure epoxide binders. At 150-200C there is a marked separation of the layers. This is explained by the fact that the samples were made of two kinds of glass: silicate and polymeric, which behave differently on heating. In the brittle stage, the binders differ little from one another in deformability, but with increasing temperature the deformability of polymer glass increases much more rapidly than that of silicate glass. The rapid increase in deformation of fiberglass with heating is due to the deformation of the polymer binder. During transition of the binder into the highly elastic state, the deformability of the resin is higher than that of the fiberglass fabric. In this case, the stresses between all layers are distributed non uniformly and this causes the layers to separate. Orig. art. has: 2 figures and 1 table.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R000617310010-2"

L 13634-65
ACCESSION NR: AP4046901

L 12010-65
ACCESSION NR: AP4047217

spherulites (diameter, several tens of microns) causes melting of these spherulites and gives rise to new crystalline formations oriented in the direction of the deforming force. Failure of specimens containing large spherulites (diameter, over 100 μ) is accompanied by their disintegration into fragments which form oriented crystalline structures. The strength of polypropylene specimens is affected by structural changes of fine or large spherulites during deformation and failure. Orig. art. has: 7 figures.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promy*shlennosti (Moscow Technological Institute of the Meat and Milk Industry)

SUBMITTED: 19Dec63 ENCL: 00 SUB CODE: OC, SS

NO REF SOV: 006 OTHER: 000 ATD PRESS: 3122

Card 2/2

L 26051-65 EWT(m)/EPF(c)/EWP(j)/EPR Pc-4/Pr-4/Ps-4 WW/RM

ACCESSION NR: AP3001568 S/0069/63/025/003/0310/0316

AUTHOR: Dogadkin, B. A.; Kuanyshev, K. G.; Gul', V. Ye.

TITLE: Study of the structure and structural changes of vulcanized rubber by measuring the creep during multiple deformation (dynamic creep)

SOURCE: Kolloidnyy zhurnal, v. 25, no. 3, 1963, 310-316

TOPIC TAGS: rubber property, rubber research, polymer creep, polymer deformation, vulcanized rubber/ SK1 rubber, SK1-30-ARN rubber, SK-1-30 rubber

ABSTRACT: A method for determining the rate of development of relaxation processes under multiple deformation conditions at a constant load is described. The use of this method offers certain advantages over other existing methods. The thermomechanical stability of a vulcanized structure can serve as an indicative characteristic for the fatigue properties of rubber under test conditions which correspond to or are analogous to conditions under which the rubber is used. A new instrument was constructed for determining the dynamic creep (see Fig. 1 of the Enclosure). Vulcanization bonds of the -C-C- type produce the lowest rate of creep. Maximum creep is observed in vulcanized rubber with salt type bonds. Sulfur vulcanizates with disulfide and polysulfide bonds occupy an intermediate

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L 26051-65

ACCESSION NR: AP3001568

position. A change in the composition of the rubber does not change this sequence. A relationship was found between the stress relaxation constants and the creep constants, which has been confirmed also by isotope exchange data on vulcanized rubber containing radioactive sulfur. The creep method may be useful in evaluating the behavior of vulcanized rubber during fatigue. Orig. art. has: 2 tables and 5 figures.

ASSOCIATION: Kafedra khimii i fiziki polimerov Moskovskogo instituta tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Department of Polymer Chemistry and Physics, Moscow Institute of Fine Chemical Technology)

SUBMITTED: 30Dec62 ENCL: 01 SUB CODE: MT

NO REF SOV: 009 OTHER: 001

Card 2/3

L 26051-65

ACCESSION NR: AP3001568

ENCLOSURE: 01

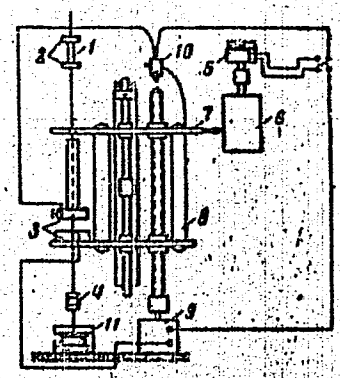

Fig. 1

Instrument for recording dynamic creep

1 - specimen; 2 - upper and lower clamps; 3 - contacts; 4 - load; 5 - Warren motor; 6 - recorder drum; 7 - recorder pen; 8 - carriage; 9 - carriage motor; 10 - automatic switch for stopping motor 9 when the specimen is broken; 11 - oil filled shock adsorber

Card 3/3

L 25738-65 EPF(c)/EPR/EPA(s)-2/EWP(j)/EWT(m)/T Pc-4/Pr-4/Pe-4/Pt-10 RM/WW
ACCESSION NR: AP3001569 S/0069/63/025/003/0334/0340

AUTHOR: Lushcheykin, G. A.; Gul', V. Ye.; Dogadkin, B. A.

TITLE: Investigation of electric charges occurring during deformation of polymers

SOURCE: Kolloidnyy zhurnal, v. 25, no. 3, 1963, 334-340

TOPIC TAGS: electrochemistry, polymer deformation, polymer dielectric, rubber property, rubber research, electroelastic effect

ABSTRACT: The purpose of this work was to investigate the nature of the electroelastic phenomenon and the effect of different factors on it. The investigation of the development of electric charge during deformation of rubber was conducted under static compression as well as under static expansion conditions. In both cases methods were used which would minimize the possibility of producing charge due to friction or producing contact potential difference. The obtained results indicate that the observed effect is not caused by the orientation of dipoles in the dielectric or by any special deformation of the vector of polarization, but is a result of a change in the charge density on the surface during deformation of the specimens. The initial development of charge on the specimens, which is responsible for the electroelastic effect, may occur as a result of electret type

Card 1/2

L 25738-65
ACCESSION NR: AP3001569

bulk polarization. The electret state was obtained in vulcanized rubber as a result of orientation under the action of the mechanical field of chain molecules containing polar groups. The stability of the polarization increases with an increase in the degree of crosslinking and with a reduction in the relaxation time of the macromolecular segments. "In conclusion the authors express their gratitude to the senior research fellow V. M. Fridkin for his valuable suggestions during the discussion of this work." Orig. art. has: 12 figures and 2 tables.

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii, Moscow (Institute of Fine Chemical Technology)

SUBMITTED: 21Dec62 ENCL: 00 SUB CODE: MT, EM

NO REF SOV: 005 OTHER: 004

Card 2/2

ACCESSION NR: AP4011309 S/0069/64/026/001/0067/0071

AUTHOR: Gul', V. Ye.; Mayzel', N. S.

TITLE: Carbon black structures in polymer compositions

SOURCE: Kolloidny*y zhurnal, v. 26, no. 1, 1964, 67-71

TOPIC TAGS: carbon black, carbon black structure, polymer composition, phenol formaldehyde resin binder, furfural acetone composition, carbon black binder

ABSTRACT: The structures formed by carbon black particles intermixed with thermosetting resins was studied. Dependence of the shear stress upon the amount of deformation of a sample containing 30% carbon black was experimentally determined. It was determined that the shear stress remains constant after stationary conditions have been attained, and the magnitude of permanent shear stress depends upon the curing time. Increasing carbon black content in a furfural acetone monomeric composition increased the (a) curing rate (b) shear

Card 1/2

ACCESSION NR: AP4011309

stress and (c) maximum shear stress, of which the latter is attained in the terminal curing stages. Analogous results were obtained from phenol formaldehyde resin with the one-stage type (E-181) epoxy resin. It may be concluded that an increase in the carbon black content is accompanied by a change in curing rates. A change in the structure formed by the carbon black particles was observed in all checked cases, this being further confirmed by a change in the electrical conductivity of the system during the curing process. The specific electrical resistance decreased as curing progressed. The curing process is accompanied by dispersion of the carbon black particles which can form chain-like electric-conducting structures. Localized overheating, caused by high current, caused breaking down of the electric-conducting structures. Orig. art. has: 6 figures

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promy*shlennosti (Moscow Technological Institute for the Meat and Milk Industry)

SUBMITTED: 13Jul62 DATE ACQ:14Feb64 ENCL: 00
SUB CODE: GC NO REF SOV: 002 OTHER: 000

Card 2/2

ACCESSION NR: AP4037176 S/0069/64/026/003/0308/0311

AUTHOR: Dogadkin, B. A.; Snezhko, A. G.; Gul', V. Ye.

TITLE: Aqueous dispersions of polypropylene

SOURCE: Kolloidny*y zhurnal, V. 26, no. 3, 1964, 308-311

TOPIC TAGS: polypropylene, polypropylene aqueous dispersion, polypropylene dispersion emulsifier, rosin, oleic acid, stearic acid, polypropylene dispersion saponifier, polypropylene dispersion time, polypropylene dispersion temperature, polypropylene dispersion stability

ABSTRACT: The influence of the main factors determining the dispersion process was studied for the purpose of broadening the range of aqueous dispersions and for obtaining films for food wraps. Powdered non-stabilized polypropylene was used as test material. Its preparation, i.e. dispersion on rollers, adding of emulsifier, alkaline hydrolysis and aqueous redispersion are described. This was evaluated according to size of particles (microphotography) and aggregate stability in a water solution (dilution threshold - maximum water dilution obtainable without coagulation). The main factors were: nature of the emulsifier, concentration and

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ACCESSION NR: AP4037176

method of introducing the alkaline solution. The time required for dispersion and the dispersion properties depended upon the speed of introduction and the concentration of the saponifying agent added to the mixture of polypropylene and emulsifier. Increased alkaline concentration (2% and 5% KOH tested) and its rapid introduction (15-50 minutes tested) resulted in a lower dispersability of the system, due to bigger particle size. Compared to oleic and stearic acid, rosin as emulsifier gave best results. Mycellar emulsifier formation, which depends upon temperature, gave the best stabilizing results. The selection of dispersion temperature depended upon the emulsifier (20C for oleic, 70C for stearic acid, 50-60C for rosin). Lower temperatures increased the particle diameter and decreased aggregate stability of the system. The best dispersion stability with ionogenic emulsifiers was obtained within narrow pH limits (11-11.5). Such dispersions had a low dilution threshold (to 4%); 20% dispersions with pH 11 easily coagulated upon slight dilution. Orig. art. has: 1 table and 4 figures.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy technologii im. M. V. Lomonosova (Moscow Institute of Fine Chemicals Technology); Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promy*shlennosti (Moscow Technological Institute of Meat and Milk Industry)

Card 2/3

ACCESSION NR: AP4037176

SUBMITTED: 050ct63 ENCL: 00

SUB CODE: OC, GC NO REF SOV: 003 OTHER: 000

Card 3/3

DONTSOVA, E.P.; GVIL'DIS, V.Yu.; ZABOROVSKAYA, Ye.E.; GUL', V.Ye.

Effect of temperature on the degradation process of fiber glass plastics during one-dimensional stretching. Plast.massy no.10: 53-55 '64. (MIRA 17:10)

L 43099-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

ACCESSION NR: AP5008365 S/0190/65/007/003/0417/0419

AUTHORS: Al'tzitser, V. S.; Gul', V. Ye.; Tutorskiy, I. A.; Shershnev, V. A.; Dogadkin, B. A.

TITLE: Copolymerization of ozonated pulverized vulcanizers with polyacrylate esters.

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 3, 1965, 417-419

TOPIC TAGS: rubber, copolymerization, ozone, vulcanizer, resin/ SKI vulcanizer, NK vulcanizer, SKS 30 ARM vulcanizer, SKB vulcanizer, SKD vulcanizer

ABSTRACT: This article, the third of the series "Chemical Modification of Vulcanizers," presents data from an investigation of the interaction between ozonated pulverized vulcanizers and polyacrylate esters. Vulcanizers SKI, NK, SKS-30 ARM, SKB, and SKD, and polyester resin MGF-9 were tested. Figure 1 shows the amount of peroxides formed by ozone and various vulcanizers. These peroxide groups, though stable at room temperature, readily decompose upon heating, and apparently form free radicals, initiating polymerization. Heating of ozonized pulverized vulcanizers with polyester resin causes the hardening of the mixture. Modified products formed during the latter process show properties common to both substances, the elastic vulcanized rubber, and the oil-, gasoline-, and heat-resistant polyacrylate ester.

Card 1/2

L 43099-65
ACCESSION NR: AP5008365

The authors postulate that the vulcanizate particles are bound chemically with the polyacrylate ester molecules, forming a composite three-dimensional polymer structure. Orig. art. has: 3 figures.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 06May64 ENCL: 01 SUB CODE: OC, MT

NO REF SOV: 003 OTHER: 000

Card 2/3

L 55049-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5012425 UR/0374/65/000/002/0021/0026
678:539.377

AUTHORS: Gul', V. Ye. (Moscow); Ryabova, M. R. (Moscow)

TITLE: Two-dimensional deformation of polymers. 1. Temperature effect on the reversibility of ascaplen deformation

SOURCE: Mekhanika polimerov, no. 2, 1965, 21-26

TOPIC TAGS: synthetic rubber, isoprene, temperature dependence, strain measurement / ascaplen

ABSTRACT: The effect of two-dimensional deformation upon the mechanical properties of ascaplen (the plasticized hydrochloride of synthetic polyisoprene rubber) was studied. The mechanical properties of films of this material change in dependence on the relative strain values along the two axes. With increase in strain along one axis, the values of the modulus and disruptive stress along the other axis decrease. The sum of the relative strain during rupture along one axis and the corresponding strain along the other axis remains constant within the limits of measuring accuracy. With increase in deformation temperature, the amount of strain (made up of irreversible strain and strain that disappears

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L 55049-65
ACCESSION NR: AP5012425

on heating) increases. The ratio of the two types of strain in ascaplen changes with increase in deforming temperature. At shrinkage temperatures above 100C, increase in deforming temperature is accompanied by increase in the relative amount of reversible strain. At shrinkage temperatures below 100C, change in amount of reversible strain with deforming temperature occurs erratically, depending on the temperature at which shrinkage takes place. The authors conclude that the increase in disruptive stress with increase in prestressing temperature is probably associated with orienting and crystallizing processes during relaxation of stresses. Orig. art. has: 8 figures.

ASSOCIATION: none

SUBMITTED: 05Nov64 ENCL: 00 SUB CODE: MT, TD

NO REF SOV: 009 OTHER: 002

Card 2/2

L 59223-65 EWT(m)/EPF(c)/EWP(v)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 WW/RM

ACCESSION NR: AP5016877 UR/0374/65/000/003/0003/0007
678:539.015

AUTHOR: Rayevskiy, V.G.; Makarskaya, L.V.; Gul', V. Ye.

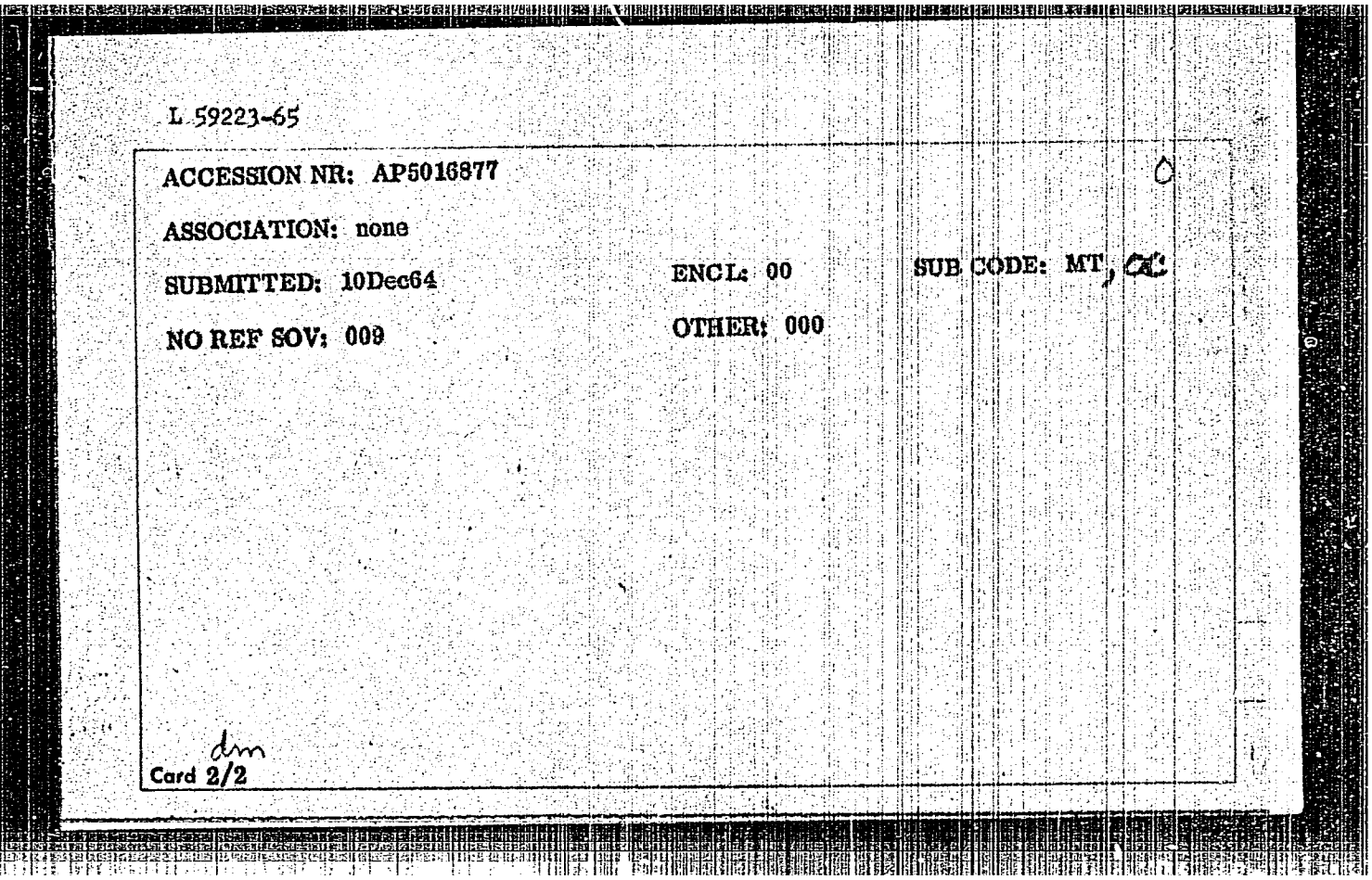
TITLE: Effect of the size of spherulites on the adhesion of polypropylene

SOURCE: Mekhanika polimerov, no. 3, 1965, 3-7

TOPIC TAGS: polypropylene, polymer adhesion, spherulite, butadiene elastomer, cohesive strength

ABSTRACT: The effect of the growth of spherulites (25-185 microns in diameter) on the adhesive properties of polypropylene and its density was investigated. The adhesive properties were estimated from the introduced "adhesiveness" and "adhesive susceptibility" characteristics. It was shown that, in contrast to the change in cohesive strength, the strength of adhesive bonds between polypropylene (substrate) and the SKB butadiene elastomer (adhesive) rises somewhat with increasing diameter of the spherulites, and that the density of polypropylene increases in linear fashion. It is postulated that the change observed in the adhesive susceptibility is due to the development of the surface of the samples, which accompanies the growth of the spherulites. Orig. art. has: 2 figures and 1 table.

Card 1/2



L 59223-65

ACCESSION NR: AP5016877

ASSOCIATION: none

SUBMITTED: 10Dec64 ENCL: 00 SUB CODE: MT, CH

NO REF SOV: 009 OTHER: 000

dm

Card 2/2

L 37651-65 EPF(c)/EPA(s)-2/EWA(h)/EWP(j)/EWT(l)/EWT(m)/T Pc-4/Pr-4/Pt-10/Ps-6/
Peb IJP(c) AT/RM

ACCESSION NR: AP5009321 S/0191/65/000/004/0046/0049

AUTHOR: Gul', V. Ye.; Shenfil', L. Z.; Mel'nikova, G. K.

TITLE: Formation of current-conducting structures in a polymeric material in a magnetic field

SOURCE: Plasticheskiye massy, no. 4, 1965, 46-49

TOPIC TAGS: organic semiconductor, semiconducting polymer, current conducting plastic, nickel, epoxy resin

ABSTRACT: A semiconducting plastic has been prepared by using a magnetic field to align nickel powder filler to form current-conducting structures in epoxy resins. The magnetic field technique was used to impart electrical conductivity to the plastic without resorting to high loads of filler which would impair mechanical properties. Finely divided or coarse-grained nickel powder or a mixture of both was dispersed in ED-5 epoxy resin plasticized with liquid thiocol, with or without polyethylenepolyamine or triethanolamine hardener. The dispersion was placed between the poles of an electromagnet and subjected to fields of 0—1200 oersted. It was found that when the magnetic field was applied during curing, it had a great effect on the resistivity of the end product. All conditions being equal, resistivity dropped by two orders of magnitude when the magnetic field was applied.

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ACCESSION NR: AP5009321

For example, resistivities as low as 5 x 10^{-3} ohm·cm were obtained for a resin loaded with 7.5 vol% finely divided and 22.5% coarse-grained nickel. The formation and breakup of the structure in uncured resin were relaxation processes. The optimum field intensity increased with temperature. To minimize the resistivity, a pulsating magnetic field was required. The magnetic field was most effective when coarse-grained nickel powder having an elongated particle shape was used and at low curing temperatures. Orig. art. has: 5 figures and 1 table. [SM]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, SS

NO REF SOV: 003 OTHER: 006 ATD PRESS: 3221

Card 2/2

L 54969-65 EPA(s)-2/EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4/Pt-7 RM
ACCESSION NR: AP5012108 UR/0191/65/000/005/0049/0054
678.01:537.311.01:539.2

AUTHOR: Gul', V. Ye.; Mayzel', N. S.

TITLE: Effect of the three-dimensional structure of conducting polymeric materials on their electrical conductivity

SOURCE: Plasticheskiye massy, no. 5, 1965, 49-54

TOPIC TAGS: polymer structure, polymer conductivity, filler, acetylene black, thermosetting resin, epoxy resin, polyethylene polyamine, resin hardening, electrical resistance

ABSTRACT: The authors investigated the influence of the development of the three-dimensional structure on the conducting properties of E-181 thermosetting epoxy resin and the rubberlike fluorocopolymer SKF-32 (both filled with acetylene black). The structure of the filler in the polymeric systems and the influence of polymer type on the electrical conductivity of the system were also studied. A hardener (polyethylene polyamine) was introduced immediately before the experiment. It was shown that the formation of a continuous, conducting, three-dimensional structure of the filler (acetylene black) is determined by the prob-

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L 54969-65
ACCESSION NR: AP5012108

2

ability of contact between the filler particles, which increases with the filler content. The acetylene black can, in turn, affect the formation of the three-dimensional structure of the polymer, as indicated by studies of the hardening kinetics of electroconductive compositions. A relationship was observed between the change in the conductivity of E-181 compositions during their hardening and the kinetics of the hardening process. The character of the curves representing conductivity vs. acetylene black concentration is independent of the type of polymer. The absolute values of the conductivity for the same content of acetylene black in the range of low degrees of filling depend on the type of polymer and its chemical nature. "The authors thank N. M. Fodiman and A. N. Kamenskiy for help with the electron microscopy." Orig. art. has: 6 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: OC, EM

NO REF SOV: 004 OTHER: 006

Card 2/2

L 24118-65 EPF(c)/EPR/EWP(j)/EWT(m)/T/EWP(v) Pc-4/Pr-4/Ps-4 RM/WW
ACCESSION NR: AP5003826 S/0190/65/007/001/0045/0049

AUTHOR: Gul', V. Ye.; Fomina, L. L.

TITLE: The nature of the adhesion of polymeric materials

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 1, 1965, 45-49

TOPIC TAGS: adhesion, polyethylene, cellophane, adhesive strength, adhesive, bonding

ABSTRACT: An experimental study has been made of the effect of the contact temperature, time, and pressure, and also the stripping rate and temperature on the adhesive strength of the bond in doubled polyethylene-cellophane films. The doubled films were prepared by pressing at 20—250 kg/cm^2 for 5 min at contact temperatures up to 200C and with subsequent cooling under pressure. The adhesive strength was determined in stripping tests. The test results are graphically reported in the original article. They are interpreted in terms of a microrheological mechanism of adhesion: The flow of polyethylene into microscopic defects in cellophane (which does not soften) in-

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L 24118-65
ACCESSION NR: AP5003826

creases the number of contacts of "active groups" of the two materials. As contact time passes, the defects are filled up, and the flow eventually stops. The flow increases in rate with increasing contact time and temperature. At excessively high contact pressures the flow stops owing to the so-called mechanical glass transition in the polyethylene. The effect of the stripping rate and temperature on adhesive strength was similar to their effect on adhesive strength in the case of cohesive failure. Orig. art. has: 4 figures and 3 formulas. [SM]

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Dairy Industry)

SUBMITTED: 28Feb64 ENCL: 00 SUB CODE: GC, MT

NO REF SOV: 007 OTHER: 001 ATD PRESS: 3176

Card 2/2

ALTYNTSEV, V.S.; GUL', V.Ye.; [illegible], L.A.; [illegible], Z.A.
DOGADKIN, B.A.

Copolymerization of ozonized pulverized vulcanizates with polyester acrylates. Vysokom. soed. 7 no.3 [illegible] Mr '65.
(MIRA 18:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.

L 59280-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5015573 UR/0153/65/008/002/0305/0309

AUTHOR: Rayevskiy, V. G., Voyutskiy, S. S., Gul', V. Ye., Kamenskiy, A. N., Moneva, I.

TITLE: A study of the nature of the breaking of adhesion bonds between elastomers and a caprolactam film

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 8, no. 2, 1965, 305-309

TOPIC TAGS: polymer adhesion, elastomer, caprolactam, polychloroprene, polyisobutylene, natural rubber, polymer film

ABSTRACT: A study was made of the rupture of adhesion bonds between a commercial caprolactam film (PK-4) and polychloroprene (nairit), polyisobutylene (P-118), and natural rubber (smoked sheets) during the formation of bonds under normal conditions. The presence of the caprolactam between the phases was found to lower the adhesion strength of the bonds. The change in the surface of the caprolactam film after the adhesion bonds with the above substances were broken was studied by electron microscopy and fluorescence analysis. It was shown that in the presence of the caprolactam in the contact zone, the breaking of the adhesion bonds takes place along the layer of the caprolactam. In the absence of the latter, the surface of the film following layer separation does not

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L 59280-65
ACCESSION NR: AP5015573

differ from its surface prior to contact in the great majority of cases. However, in the case of the breaking of bonds between natural rubber and caprolactam film from which the caprolactam monomer has been washed out, the migration of low-molecular fractions and impurities contained in natural rubber to the surface of the substrate is possible. Orig. art. has: 7 figures.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Dairy Industry); Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 19Jul63 ENCL: 00 SUB CODE: MT

NO REF SOV: 006 OTHER: 006

Card 2/2

L 33532-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5004203 S/0020/65/160/001/0154/0157

AUTHORS: Gul', V. Ye.; Penskaya, Ye. A.; Kuleznev, V. N.; Arutyunova, S. G.

TITLE: Evaluating the compatibility of polymers

SOURCE: AN SSSR. Doklady, v. 160, no. 1, 1965, 154-157

TOPIC TAGS: polymer, thermodynamic property, polyethylene, toluene, inert gas, methylation, viscosity, thermal treatment/ SF 4 spectrometer

ABSTRACT: Experimental investigation was conducted to determine the possibility of evaluating the compatibility of polymers on the basis of the degree of additivity of their solutions' viscosities, shifts caused by solvents, and other factors. Purified polyethylene fractionated by hot toluene extraction and freezing under inert gases yielded both low and high molecular products with viscosities of 0.054 and 0.916. Though there is no doubt about the compatibility of these fractions, still the viscosities measured at 75C with a capillary viscosimeter on 0.224 and 0.360% solutions showed deviations up to 20% from additivity (see Fig. 1 on the Enclosure). A theoretical viscosity equation

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ACCESSION NR: AP5004203

$$\eta_{abs}^{mix} = L\omega_1^2 + N\omega_1 + P, \quad \text{where}$$

$$L = (A_2' + A_2'')C^2 - 2K[\eta_1][\eta_2]C^2;$$

$$N = (\eta_{abs}' - \eta_{abs}'') - L; \; P = \eta_{abs}'';$$

and η_{abs}', η_{abs}'' are calculated viscosities, also shows no additivity. Optical density of a heated film was studied with an SF-4 spectrometer at the wavelength of 435 mμ (see Fig. 2 on the Enclosure). It was determined that the system is thermodynamically stable and that its components are compatible. Strength of the mixture of polyethylene and polypropylene was also tested at various temperatures, and the results are presented. The authors conclude that to determine the compatibility under working conditions, the range of working conditions must be found experimentally. Orig. art. has: 3 figures and 1 formula.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Milk Industry); Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 11May64 ENCL: 02 SUB CODE: OC
NO REF SOV: 000 OTHER: 000

Card 2/4

L 33532-65

ACCESSION NR: AP5004203

ENCLOSURE: 01

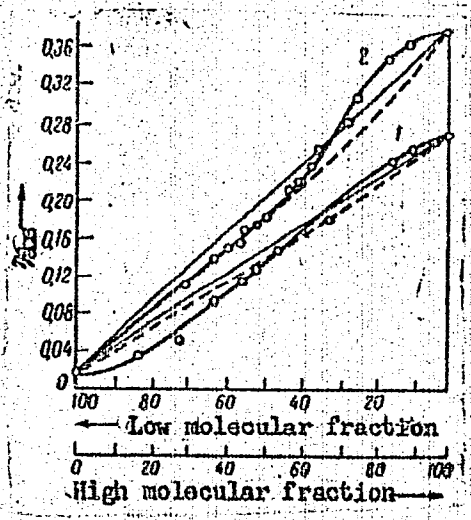

Fig. 1. Curves showing absolute viscosities of mixtures of two high-pressure polyethylene fractions: 1-C = 0.22%; 2-C = 0.36%

Card 3/4

L 33532-65

ACCESSION NR: AP5004203 ENCLOSURE: 02

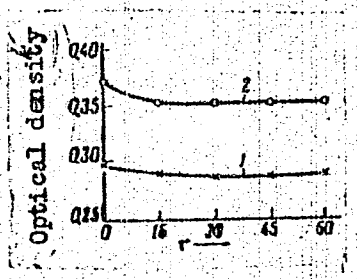

Fig. 2. Dependence of the optical density of films made of mixtures on the heating time: 1- mixture of polyethylene fractions; 2- 1:2 mixture of polyethylene with polypropylene

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L 42133-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM S/0069/65/027/002/0182/0185
ACCESSION NR: AP5008900

AUTHORS: Dogadkin, B. A.; Kuanyshev, K. G.; Gul', V. Ye.

TITLE: The effect of vulcanization structures and strain conditions on the static and dynamic strength of vulcanizates

SOURCE: Kolloidnyy zhurnal, v. 27, no. 2, 1965, 182-185

TOPIC TAGS: vulcanization, butadiene, styrene, isoprene, rubber/ SKS 30 ARM rubber, SKI rubber

ABSTRACT: The authors have investigated the effect of vulcanization structures on the static and dynamic strengths of vulcanizates under various conditions of testing. They studied pure vulcanizates of butadiene styrene rubber (SKS-30-ARM) and cis-isoprene rubber (SKI), obtained by vulcanizing hexachloroethane, tetrachloroquinone, dicumyl peroxide, and tetramethyl thiuram sulfide without sulfur. They also tested ordinary sulfur vulcanizates with different accelerating agents: N-cyclohexyl-2-benzothiazyl sulfenamide and diphenyl guanidine. The grouping of vulcanizates with different structures according to their strength depends on the strain conditions. At about 20C and a strain rate of 500 mm/min, vulcanizates containing thermally stable bonds possess lower static strength than vulcanizates

Card 1/2

L 42133-65
ACCESSION NR: AP5008900

containing polysulfide bonds. At 120C and a rate of 1 mm/min, the reverse dependence is observed. The resistance of vulcanizates to fatigue during alternate bending and during steady tension is greater the stronger the crosslinks if the amplitude of dynamic stress does not exceed some definite value (differing for each type). When this value is exceeded, the reverse dependence is noted. The mechanism by which vulcanization structures affect dynamic strength is very complex. It is noted that structural changes in vulcanizates during repeated deformation are determined not only by the initial decay of the lattice but also by the nature of secondary processes of localization and regrouping of active centers that develop. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute of Fine Chemical Engineering)

SUBMITTED: 28Dec63 ENCL: 00 SUB CODE: MT

NO REF SOV: 003 OTHER: 002

Card 2/2

L 63844-65 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5020223 UR/0069/65/027/004/0524/0528
541.182.024:539.424

AUTHORS: Tolmacheva, M. N.; Gul', V. Ye.; Dogadkin, B. A.

TITLE: Mechanical properties of carbon black-filled mixtures at low temperatures. 1. The strength characteristics of carbon black-filled nonvulcanized mixtures

SOURCE: Kolloidnyy zhurnal, v. 27, no. 4, 1965, 524-528

TOPIC TAGS: carbon black, vulcanizate, butadiene, styrene, vulcanized rubber, SKS 30A rubber

ABSTRACT: The work was carried out to elucidate the mechanism of the interaction between carbon black fillers and nonvulcanized rubbers. The rubber investigated was butadiene-styrene SKS-30A and the carbon black fillers used were channel and acetylenic black and nonactivated chimney soot. The experiments were carried out in the temperature range of 0 to -50C. The relative elongation ε and the tensile strength σ for a number of different mixtures were determined. It was found that at low temperatures the strength characteristics of carbon black-filled nonvulcanized mixtures approach those of the corresponding vulcanizates. Increasing the carbon black concentration is accompanied by an increase in the glass temperature of the polymer. The rise in the glass temperature depends on the nature of the added

Card 1/2

L 63844-65

ACCESSION NR: AP5020223

carbon black. The strengthening effect of carbon black filler disappears at a certain lowest temperature which is higher than the glass temperature of the polymer. Orig. art. has: 1 table and 3 graphs.

ASSOCIATION: Moskovskiy institut khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Chemical Technology); Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute for the Meat and Dairy Industry)

SUBMITTED: 24Mar64 ENCL: 00 SUB CODE: GC

NO REF SOV: 006 OTHER: 003

Card 2/2

L 63845-65 EWT(m)/EWP(j) RM

ACCESSION NR: AP5020235 UR/0069/65/027/004/0627/0628
539.216.2

AUTHORS: Gul', V. Ye.; Snezhko, A. G.; Dogadkin, B. A.

TITLE: The preparation of films and coatings by mixing aqueous dispersions of thermodynamically incompatible thermoplasts

SOURCE: Kolloidnyy zhurnal, v. 27, no. 4, 1965, 627-628

TOPIC TAGS: polyethylene plastic, vinyl chloride, permeability measurement, thermoplastic material

ABSTRACT: Physical properties of films made of mixed aqueous dispersions of polymers were studied to determine the proper way for preparing such mixtures. The aqueous dispersion of polyethylene (containing a stabilizer permitted for use in the food industry) and the aqueous dispersions of the copolymer of vinylidene chloride and vinyl chloride (SKh-1) were used as test specimens. From the mixture of these substances films were cast (at 135C in 20 min) and investigated. The relationships of their mechanical properties and of their water and vapor permeability to their composition are shown in Fig. 1 on the Enclosure. These films have a higher water-vapor permeability and lower strength and deformation

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L 63845-65

ACCESSION NR: AP5020235

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values than films made from the initial polymers. Gas permeability decreases monotonically as the SVKh-1 content increases. The nonmonotonic composition-properties function shows that the same water vapor permeability values and mechanical characteristics can be obtained for films of two compositions, but differing in their gas-permeability. Thus, a composition corresponding to given properties can be chosen for a material to which definite characteristics have been assigned. Orig. art. has: 1 figure.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Packing and Dairy Industry); Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 12Jan65 ENCL: 01 SUB CODE: MT

NO REF SOV: 003 OTHER: 000

Card 2/3

L 63845-65

ACCESSION NR: AP5020235 ENCLOSURE: 01

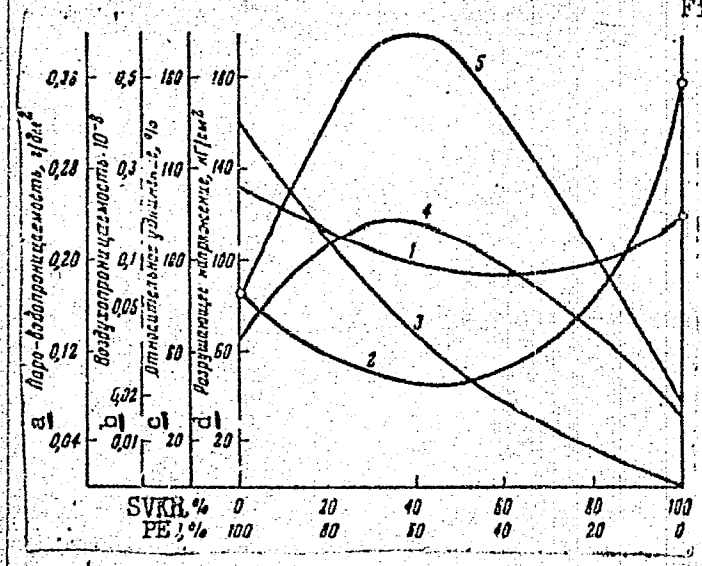

Fig. 1. Relation of the ultimate stress (1), relative elongation (2), air permeability (3), vapor permeability (4), and moisture permeability (5), to the composition of film made from a mixture of aqueous dispersions of polyethylene and SVKH

a. Water vapor permeability, g/dm^2
b. Air permeability, 10^{-8}
c. Relative elongation, %
d. Ultimate stress, kg/cm^2

Card 3/3

L 58283-65 EWT(l)/EWP(e)/EPA(s)-2/EWT(m)/EPR/EEC(t)/EWP(t)/EWP(k)/EWP(z)/EWP(b)
Pf-4/Ps-4/Pt-7/Pl-4 IJP(c) JD/GG

ACCESSION NR: AP5015424 UR/0020/65/162/004/0839/0842

AUTHOR: Gindin, L. G.; Vol'pyan, A. Ye.; Galkin, I. F.; Gul', V. Ye.

TITLE: New data on the electrical breakdown of aluminum suspensions in dielectrics

SOURCE: AN SSSR. Doklady, v. 162, no. 4, 1965, 839-842

TOPIC TAGS: dielectric breakdown, aluminum suspension, aluminum dielectric, aluminum oxide

ABSTRACT: To provide a phenomenological description of the process by which aluminum in suspensions is converted from a dielectric (due to its oxidized surface layer) to a conductor, the authors took motion pictures of the principal stages of this process. The pictures were taken continuously at the rate of one frame every 4 sec. The aluminum powder particles, ranging in size from fractions of one micron to several microns (peak of distribution curve at 1 μ), were dispersed in B-70 aviation gasoline. Aluminum powders impregnated with B-70 (into which the electrodes were inserted) were also studied. Photographs representative of the principal stages are illustrated and described. In addition, the authors investigated the fundamental problems of the structure of the bridge formed by the aluminum particles and the nature of the forces which form it and hold it together. To this end, oscil-

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L 58283-65
ACCESSION NR: AP5015424

lations of the current and voltage of the bridges were [illegible]orded, and the current-voltage characteristics of the bridge were plotted (see Fig. 1 of the Enclosure). The hysteresis loop arises from a structural rearrangement of the bridge. The observed deviations from Ohm's law were attributed to the evolutions of Joule heat. The results confirm an earlier hypothesis that the bonding between the individual links of the bridge is metallic and that when breakdown occurs the aluminum particles are welded to one another. Furthermore, the oscillograms indicate that when the current passes through the bridge, a major part is played by the forces of the electric field which continuously restore the broken contact between the links of the bridge and give it a degree of stability. Orig. art. has: 2 figures, 2 tables, and 3 formulas. [08]

ASSOCIATION: none

SUBMITTED: 18Dec64 ENCL: 01 SUB CODE: IC, EM

NO REF SOV: 003 OTHER: 002 ATD PRESS: 4037

Card 2/3

L 58283-65

ACCESSION NR: AP5015424

ENCLOSURE: 01

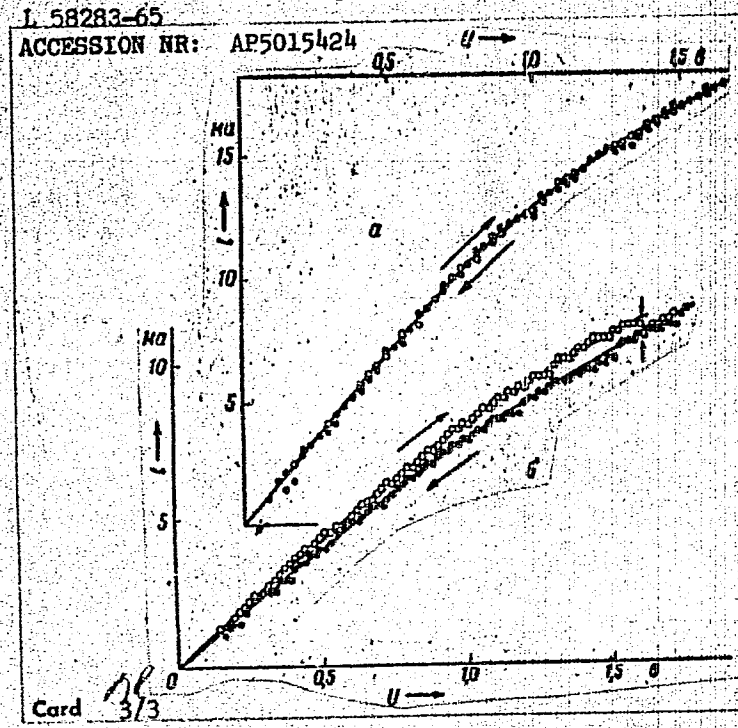

Fig. 1. Current-voltage characteristics of aluminum bridges

a - Without hysteresis loop; b - with hysteresis loop.

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L 59595-65 EWT(m)/EPF(c)/EWP(v)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 WW/RM

ACCESSION NR: AP5017460 UR/0020/65/162/005/1109/1111

AUTHOR: Gul', V. Ye.; Dvoretskaya, N. M.; Iotova, N. Kh.

TITLE: Temperature dependence of adhesion strength at various rates of separation of the adhesion seam

SOURCE: AN SSSR. Doklady, v. 162, no. 5, 1965, 1109-1111

TOPIC TAGS: adhesion strength, cellophane, polyethylene, adhesive bonding, polymer film

ABSTRACT: An attempt was made to determine the nature of the adhesive interaction which binds the various layers of a composite film material into a single multicomponent system by using data on the temperature-rate dependence of the adhesion strength. The material studied was a composite film material obtained by coating cellophane with polyethylene. The tests were carried out on a rupture-test machine with strain gages at 20-90C and separation rates of 10 to 500 mm/min. The stress during adhesive separation decreases with the temperature at all separation rates, the greatest drop being observed at 70C. At 20 to 60C and separation rates from 50 to 466 mm/min, the separation stress and the rate are related as follows:

$$\sigma_T = a v,$$

Card 1/2

L 59595-65
ACCESSION NR: AP5017460

where σ_v is the separation stress (in g/cm) at the indicated temperatures, v is the separation rate (in mm/min), and α is a constant. An interpretation of the data, based on an extension of the concepts of the mechanism of cohesive rupture to the case of adhesive separation, is given in terms of the part played by the heat energy in the kinetics of rupture of the adhesive bond between the adhesive and the substrate. Calculations using experimental data on the temperature dependence of the adhesion strength showed that for cellophane-polyethylene the apparent activation-energy is equal to 4.7 kcal/deg, which corresponds to values of the energy of molecular interaction. Orig. art. has: 4 figures and 3 formulas.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Dairy Industry)

SUBMITTED: 20Nov64 ENCL: 00 SUB CODE: MT

NO REF SOV: 007 OTHER: 000

Card 2/2

SHISHKINA, Nina Nikolayevna; NAZAROV, Arkadiy Stepanovich; ARISTOV, D.V., retsenzent; GUL', V.Ye., retsenzent; D'YAKONOVA, T.P., spets. red.; NOZDRINA, V.A., red.

[Use of polymeric films for the packaging of meat products] Primenenie polimernykh plenok dlia upakovki miasoproduktov. Moskva, Pishchevaia promyshlennost', 1965. 131 p. (MIRA 18:7)

L 2270-66 EWT(m)/EPF(c)/EWP(w)/EWP(t)/EWP(v)/EWP(1)/T/EWP(t)/EWP(k)/EWP(b)
ACCESSION NR: AP5022224 EWA(c)/ETC(m) IJP(c) RM/JD/WW/HW
UR/0191/65/000/009/0023/0025
678-416:678.029.43

AUTHOR: Rayevskiy, V. G.; Postrigan', M. V.; Gul', V. Ye.

TITLE: Study of the thermal stability of welded joints of composite film materials

SOURCE: Plasticheskiye massy, no. 9, 1965, 23-25

TOPIC TAGS: weld evaluation, aluminum foil, polyethylene terephthalate, polyethylene plastic, cellulose, thermal stability

ABSTRACT: The authors studied the temperature dependence of the strength of welded joints of two types on two-layer materials with polyethylene coatings. The base materials were aluminum foil (60 μ thick) with hydrated cellulose (cellophane) and polyethylene terephthalate (dacron) films. A polyethylene coating 25-35 μ was deposited by extrusion. Joints 5 mm wide were then prepared and their strength characteristics were measured. The strength of the joints at room temperature, relative to the strength of the material, was 12.5% in the case of the foil, 6.3% in the case of cellophane, and 19% in the case of dacron. When the temperature was raised to 100C, the strength of the joints dropped to

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L 2270-66
ACCESSION NR: AP5022224

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20% of the value of room temperature, and did not change with further rise in temperature. The temperature dependence of the strength of the joints in shear was studied. The adhesion strength in shear decreases abruptly at 90-100C, apparently because of the softening of polyethylene at these temperatures. It is shown that the strength of welded joints at a given temperature can be calculated from the strength determined under standard conditions. "G. F. Il'yokhina and V. V. Kopchikov participated in the experimental part of the work." Orig. art. has: 2 figures, 1 table, and 1 formula.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, MT

NO REF SOV: 001 OTHER: 005

Card 2/2

GUL', V.Ye.; MAYZEL', N.S.

Studying the dependence on temperature of the resistivity and volt-ampere characteristics of polymers with three-dimensional structure. Plast. massy. no.9:38-40 '65. (MIRA 18:9)

L 2985-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5022615 UR/0190/65/007/009/1645/1649
678.01:54+678.41+678.76

AUTHORS: Gorbachev, Yu. G.; Gorbatova, K. A.; Belyatskaya, O. N.; Gul', V. Ye.

TITLE: Kinetics of the hydrochlorination of natural and synthetic isoprene rubber

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1645-1649

TOPIC TAGS: natural rubber, synthetic rubber, isoprene, hydrogen chloride, chemical reaction kinetics/ SKI 3 isoprene rubber

ABSTRACT: The effects of the temperature, pressure, concentration of HCl, and structure of the rubber upon the kinetics of hydrochlorination of natural and synthetic isoprene rubber were studied. The reaction was performed by dissolving rubber in dichloroethane and treating it with a saturated solution of HCl in dioxane (ratio of solvents 4:1, respectively). It was found that the rise in reaction temperature from 0 to 20 to 40C increases the rate rapidly, in spite of the decrease in the solubility of HCl. Trebling of the stoichiometric amount of HCl is also favorable for the reaction rate. The structure of the starting rubber determines the properties of its hydrochloride. The hydrochloride of natural

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L 2985-66

ACCESSION NR: AP5022615

2

rubber containing more than 27% of chlorine forms a good quality "pliofilm" due to the highly oriented structure of the starting rubber. The isoprene rubber SKI-3 (investigated in this work) is the first synthetic rubber which, upon conversion to its hydrochloride, is capable of forming such a film. The latter is equal to films from the natural material in its physical and mechanical properties. Orig. art. has: 1 table and 5 figures.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of Meat and Milk Industries) 44

SUBMITTED: 03Nov64 ENCL: 00 SUB CODE: MT, GC

NO REF SOV: 001 OTHER: 007

Card 2/2

RAYEVSKIY, V.G.; GUL', V.Ye., VOYUTSKIY, S.S.; KAMENSKIY, A.N., MONEVA, I.

Study of the surface of a caprolactam film. Izv. vys. ucheb. zav.; khim. i khim. tekh. 8 no.1:131-134 '65. (MIRA 18:6)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

RAYEVSKIY, V.N.; VOYUTSKIY, S.S.; GUL', V.Ye.; KAMENSKIY, A.N.; MONEVA, I.

Studying the nature of the destruction of adhesive joints of elastomers with caprolactam films. Izv.vys.ucheb.zav.; khim. i khim.tekh. 8 no.2:305 '65. (MIRA 18:8)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

GUL', V.Ye., prof.

Polymeric materials for food packaging. Zhur. VHKO 10 no.3:319-325 '65. (MIRA 18:8)

ERCHIN, V.F.; TOLIKINA, N.F.; BELYATSKAYA, G.N.; GUR'YEV, V.Ye.

Composition of impurities in straight-chain paraffinic hydrocarbons having analytical application. Zhur. anal. khim. 20 no.9: 1022-1024 '65. (MIRA 18:9)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti.

GUL', L.Ye.; [illegible], Ye.G.

Products of interaction between polypropylene and alkaline sulfate lignin. Dokl. AN SSSR 165 no.1:110-113 N '65.

(MIRA 18:10)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti. Submitted May 12, 1965.

TOLMACHEVA, M.N.; GUR'YEV, V.V.; ZOGRAFOV, B.A.

Mechanical properties of carbon-black stock at low temperatures. Part 1; Strength characteristics of carbon black-extended uncured rubber. Koll. zhur. 27 no.4:524-528 Jl-Ag '65. (MIRA 18:12)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova i Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti. Submitted March 24, 1964.

L 13811-66 EWT(m)/EWP(j)/T WW/RM

ACC NR: AP6002488 (A) SOURCE CODE: UR/0191/66/000/001/0068/0069

37
36

AUTHORS: Gul', V. Ye.; Lyubeshkina, Ye. G.

ORG: none

TITLE: New frostproof modification of polypropylene-poprolin

SOURCE: Plasticheskiye massy, no. 1, 1966, 68-69

TOPIC TAGS: plastic, polypropylene plastic, tensile strength, plasticizer

ABSTRACT: Preparation of a frostproof polypropylene-based product with unchanged tensile strength σ_B by introducing of a cross-linking agent CA is described. This agent was tested because a plasticizer, dioctylsebacate (I), normally used to lower the brittleness temperature of polypropylene, also lowers its tensile strength. Film samples from cross-linked and untreated polypropylene, 1 cm wide, 3 cm long, and 60--70 microns thick were stretched up to 500% on a stretching machine and then placed in a thermocabinet at 130C. Experiments have shown that the ratio of reversible to irreversible deformation of the untreated polypropylene was 9, while that of cross-linked propylene containing 1.5% of CA was 16. Addition of I to cross-linked polypropylene resulted in a frostproof (-60 to -70C) modified product of tensile strength higher than that of the polypropylene. Relationships between the content of CA and tensile strength, and of CA content and brittleness temperature are illustrated in Figs. 1 and 2.

Card 1/2

UDC: 678.742.3

L 13811-66

ACC NR: AP6002488

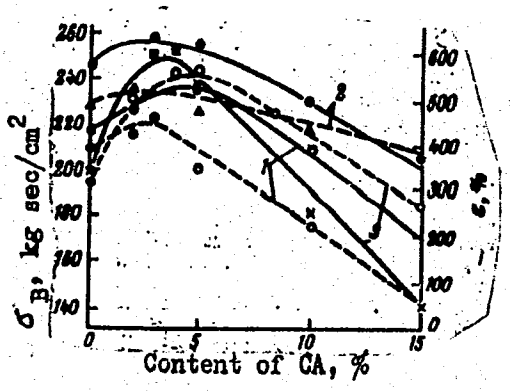

Fig. 1. Limit of tensile strength σ_B (———) and relative elongation (-----) of modified polypropylene as a function of the content of cross-linking agent: 1 - starting polypropylene; 2 - polypropylene plus 7% I; 3 - polypropylene plus 15% I.

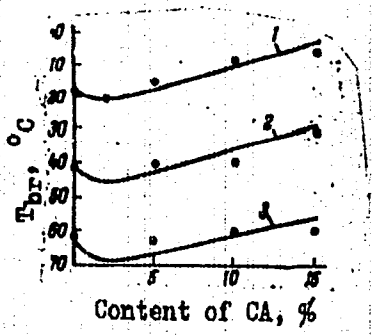

Fig. 2. Brittleness temperature, T_{br}, of modified polypropylene as a function of cross-linking agent content: 1 - starting polypropylene 2 - polypropylene plus 7% I; 3 - polypropylene plus 15% I.

The authors express their gratitude to M. D. Frenkel' and his coworkers for enabling them to perform certain experiments. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 003

Card 2/2

L 14165-66 EWP(j)/EWT(d)/EWT(m)/EWP(b)/T/EWP(w)/EWP(t) IJP(c) EM/RM/WW/JD

ACC NR: AP6003944 SOURCE CODE: UR/0374/65/000/005/0090/0094

AUTHOR: Rybalov, N. Ye. (Moscow); Gul', V. Ye. (Moscow)

ORG: none

TITLE: Research of dynamical fatigue in combined polymer film materials. 1. Research of dynamical fatigue of combined films of polyethylene foil

SOURCE: Mekhanika polimerov, no. 5, 1965, 90-94

TOPIC TAGS: fatigue test, polymer, polyethylene plastic, mechanical vibration, solid mechanical property

ABSTRACT: Dynamical fatigue of combined film materials depending on frequency and amplitude of deformation was studied. Tests were carried out on an installation capable of reproducing mechanical vibration with a frequency range from 10—600 cycles per second. The objects to be tested were polyethylene-lined packages. Dependence of dynamical fatigue of polyethylene foil upon amplitude, frequency, and acceleration was determined. It was shown that in all cases the formation of cracks in and exfoliation of the foil from the polyethylene lining precede the destruction of material, the latter being caused by the polyethylene lining pierced by the foil edge at the place of the crack.

Card 1/2 UDC: 678:620.169

L 14165-66
ACC NR: AP6003944

Orig. art. has: 5 figures. [Based on author's abstract].

SUB CODE: 11/ SUBM DATE: 18Feb65

Card 2/2

L 11009-66 EWT(m)/EWP(j) WW/RM

ACC NR: AP6005824 (A) SOURCE CODE: UR/0374/65/000/006/0003/0009

AUTHOR: Gul', V. Ye. (Moscow); Lyubeshkina, Ye. G. (Moscow); Shargorodskiy, A. M. (Moscow)

ORG: none

TITLE: Mechanical properties of polypropylene modified by decontamination products of alkali sulfate lignin

SOURCE: Mekhanika polimerov, no. 6, 1965, 3-9

TOPIC TAGS: polypropylene plastic, alkali mineral, plasticizer, solution acidity, solid mechanical property, molecular interaction, [illegible] test

ABSTRACT: A study of mechanical properties of polypropylene has shown that the introduction of alkali sulfate lignin in polypropylene at 180C, in the process of manufacture, cross-linkage of linear polypropylene molecules with lignin molecules takes place. It was established that a new product with a brittling point of -65C might be obtained by modifying polypropylene with alkali sulfate lignin in the presence of a plasticizing agent. Orig. art. has: 6 figures and 4 tables. [Based on author's abstract]

SUB CODE: 11, 07/ SUBM DATE: 30Mar65/ ORIG REF: 008

Card 1/1 UDC: 678:541.6+621.03

L 13616-66 EWT(m)/EWP(v)/EWP(j)/T/ETC(m) WW/RM

ACC NR: AP6000959 (A) SOURCE CODE: UR/0286/65/000/022/0042/0042

AUTHORS: Gul', V. Ye.; Snezhko, A. G.; Solov'yev, Ye. V.

ORG: none

55
B

TITLE: A method for fixing saturated polyolefins to nonmetallic materials. Class 22, No. 176347

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 42

TOPIC TAGS: olefin, adhesive bonding, adhesion, chemical bonding

ABSTRACT: This Author Certificate presents a method for fixing saturated polyolefins to nonmetallic materials, such as cellophane or polyethyleneterephthalate. To increase the strength of the joint, the surface of a nonmetallic material is coated with a thin layer of saturated polyolefin dispersed in water and then with polyolefin at the temperature of its melting.

SUB CODE: 13/ SUBM DATE: 09Dec63

Card 1/1 NW

UDC: 678.029.42:668.395

GUL', V.Ye.; SNEZHKO, A.G.; DOGADKIN, B.A.

Preparation of films and coatings by mixing aqueous dispersions of thermodynamically incompatible thermoplasts. Koll. zhur. 27 no.4:627-628 Jl-Ag '65. (MIRA 18:12)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova. Submitted January 12, 1965.

YERMILOVA, G.A.; ROGOVAYA, E.M.; GUL', V. Ye.

Determination of crystallinity and orientation in the processing of polypropylene to films by the method of extrusion with pneumatic drawing. Plast. massy no. 12:24-26 '65 (MIRA 19:1)

GUL', V.Ye.; PENSKAYA, Ye.A.; KULEZNEV, V.N.

Evaluation of the compatibility of polymers. Koll.zhur. 27 no.3:341-345 My-Je '65. (MIRA 18:12)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova. Submitted Jan. 2, 1964.

GUL', V.Ye.; SNEZHKO, A.G.; SOLOV'YEV, Ye.V.; DOGADKIN, B.A.

Aqueous dispersions of polypropylene with polyvinyl alcohol as emulsifier. Koll.zhur. 27 no.3:346-348 My-Je '65.
(MIRA 18:12)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova i Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti. Submitted Dec. 28, 1963.

RAYEVSKIY, V.G.; POSTRIGAN', M.V.; GUL', V.Ye.

Heat resistance of the welded seams of composite film materials. Plast. massy no.2:45-47 '66. (MIRA 19:2)

L 21535-66 EWT(m)/EWP(j)/ETC(m)-6/T/EWP(t) IJP(c) WW/JD/HW/NJ

ACC NR: AP6007974 SOURCE CODE: UR/0191/66/000/003/C063/0065

AUTHOR: Gul', V. Ye.; Shenfil', L. Z.; Mel'nikova, G. K.

ORG: none

TITLE: Electrical conductivity of films from epoxy resin with metal fillers

SOURCE: Plasticheskiye massy, no. 3, 1966, 63-65

TOPIC TAGS: organic semiconductor, semiconducting polymer, epoxy plastic, nickel filler

ABSTRACT: The rate of drop of electrical sensitivity in the course of hardening of nickel powder-filled epoxy films has been measured as a function of the percentage hardener used and hardening temperature. ED-5 epoxy resin containing 37% electrolytic nickel and diethylenetriamine hardener were used. The hardening temperature varied from 20 to 70C. The experimental results are given in graphic and tabular form. It was found that with increasing percentage hardener and rising hardening temperature, the rate of drop of sensitivity increased. Cross-linking in the course of hardening was accompanied by shrinkage, an increase in internal stresses, and the formation of contacts between current-conducting nickel particles, which caused the sensitivity drop. Resistivities were of the order of 10^5 to 10^{-2} ohm-cm. Orig. art. has 4 figures.

[SM]

SUB CODE: 20, 11/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 002/ ATD PRESS: 4219

Card 1/1 dda

L 21191-66 EWT(1)/EWP(e)/EWT(m)/EWP(t)/EWP(k) IJP(c) JD
ACC NR: AP6008052 SOURCE CODE: UR/0020/66/166/004/0894/0896

AUTHOR: Vol'pyan, A. Ye.; Gindin, L. G.; Gul', V. Ye.

ORG: All-Union Correspondence Polytechnic Institute (Vsesoyuznyy zaochnyy politekhnicheskiy institut)

TITLE: Behavior of copper suspensions and powders in a constant electric field

SOURCE: AN SSSR. Doklady, v. 166, no. 4, 1966, 894-896

TOPIC TAGS: copper, electric conductivity, powder metal property, semiconducting film

ABSTRACT: Powdered electrolyte copper particles (2-15 μ) oxidized in air and covered with a film of semiconducting Cu_2O were suspended in B-70 airplane gasoline and the conductivity of the suspension in a constant electric field was studied. The volt-ampere characteristic obtained showed that the conductivity of the system increases smoothly with the field strength as is typical of semiconductors in strong electric fields. The conductivity was due to the contact between the individual

Card 1/2 UDC: 54.148

L 21191-66
ACC NR: AP6008052

copper particles coated with Cu_2O. The critical voltage (value at which breakdown occurs) was found to be directly proportional to the thickness of the oxide film. This relationship can be used in rapid methods for determining the degree of oxidation of metal powders. In order to show that the conducting structures in powders do not differ from those observed in suspensions, the conductivity of copper powder immersed in gasoline was studied as a function of the depth of immersion of the electrodes; the volume of powder between the electrodes was proportional to the depth. It was found that the conductivity of the oxidized copper powder before breakdown and that of deoxidized copper powder is approximately proportional to the immersion depth whereas the conductivity of oxidized powder after breakdown is independent of the volume of powder between the electrodes. Hence, in the first and second case three-dimensional conducting structures are formed, but in the third case, a bridge is produced. The paper was presented by Academician A. A. Balandin on 6 July 1965. Orig. art. has: 3 figures.

SUB CODE: 11/ SUBM DATE: 05Jul65/ ORIG REF: 006/ OTH REF: 000

Card 2/2 dda